Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Supplementary Information

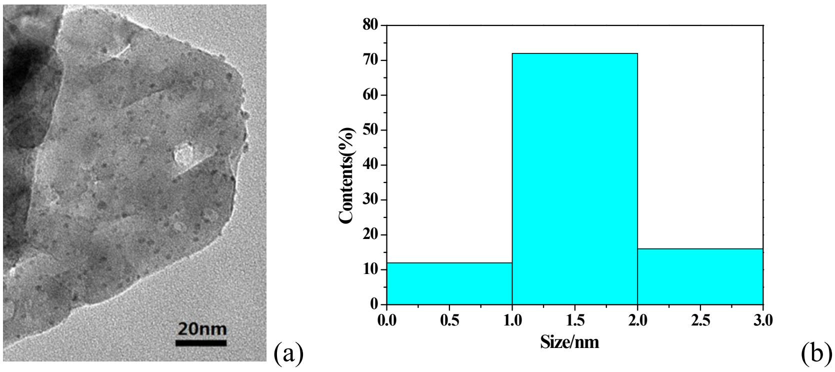


Fig. S1 (a) TEM iamge and (b) Au particle size distribution of s-Au/*h*-Co_3O_4 (1.6 ± 0.6 nm).

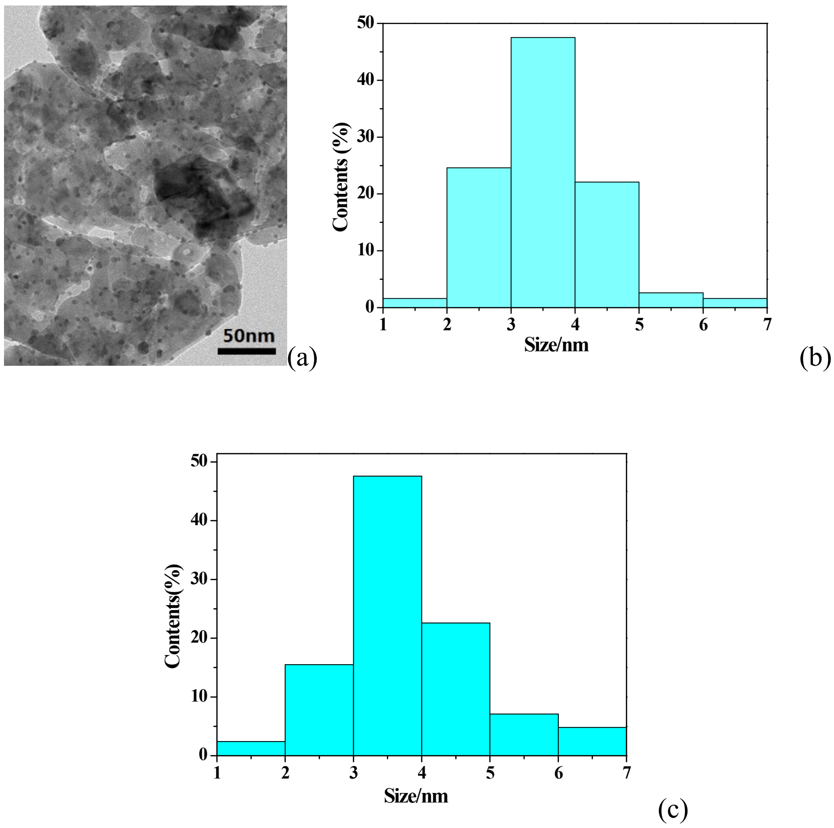


Fig. S2 (a) TEM image of used Au/*h*-Co_3O_4, (b) Au particle size distribution of used Au/*h*-Co_3O_4 (3.5 ± 0.8 nm), and (c) Au particle size distribution of used Au/*c*-Co_3O_4 (3.9 ± 1.2 nm).

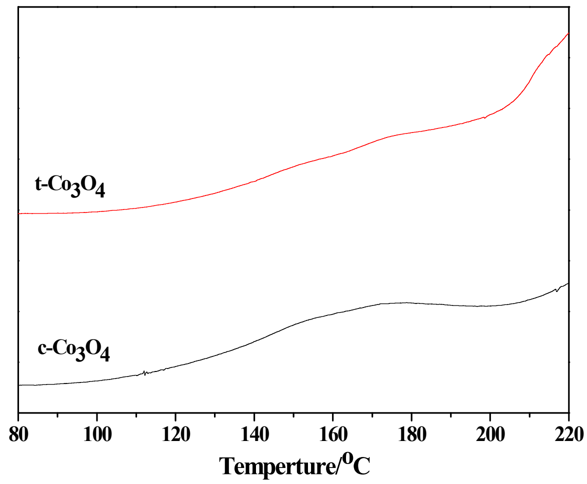


Fig. S3 H_2-TPR profiles of *c*-Co_3O_4 and *t*-Co_3O_4 in the 80-220°C range.

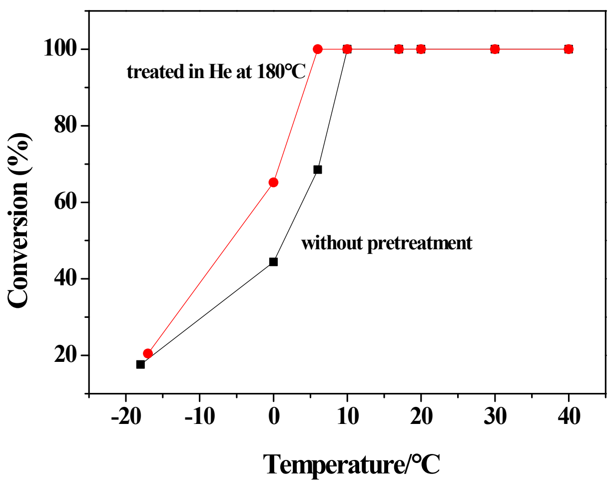
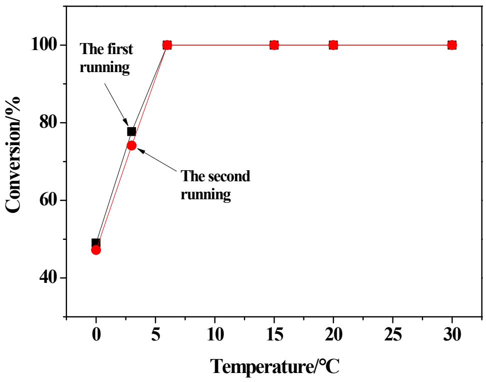


Fig. S4 Temperature dependence of CO conversions over s-Au/*h*-Co_3O_4 (1.6 ± 0.6 nm) without and with He-pretreatment.

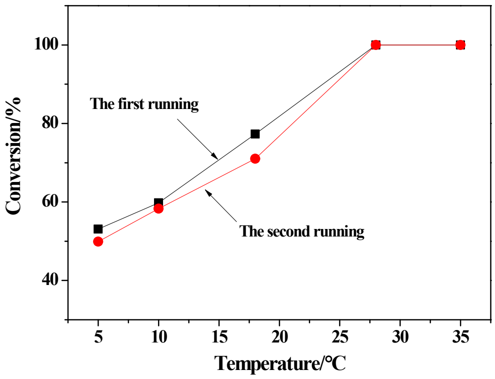
Table S1 Activities over s-Au/*h*-Co_3O_4 (1.6 ± 0.6 nm) without and with He-pretreatment

Sample	Pretreatment	Temp. (°C)/ Conv. (%)	T_{50} (°C)	TOF [a] (μmol m^{-2} min^{-1})
s-Au/*h*-Co_3O_4	Non	0/44.4	2	0.41
	He	0/65.2	-7	0.60

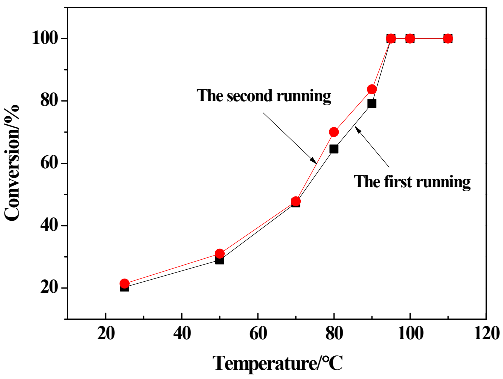
[a] The CO conversions at 0°C were used to calculate the TOFs.



(a)



(b)



(c)

Fig. S5 Activity repeatability tests over (a) s-Au/*h*-Co_3O_4, (b) Au/*h*-Co_3O_4, and (c) Au/*t*-Co_3O_4. The fresh samples were pretreated in the reaction atmosphere.

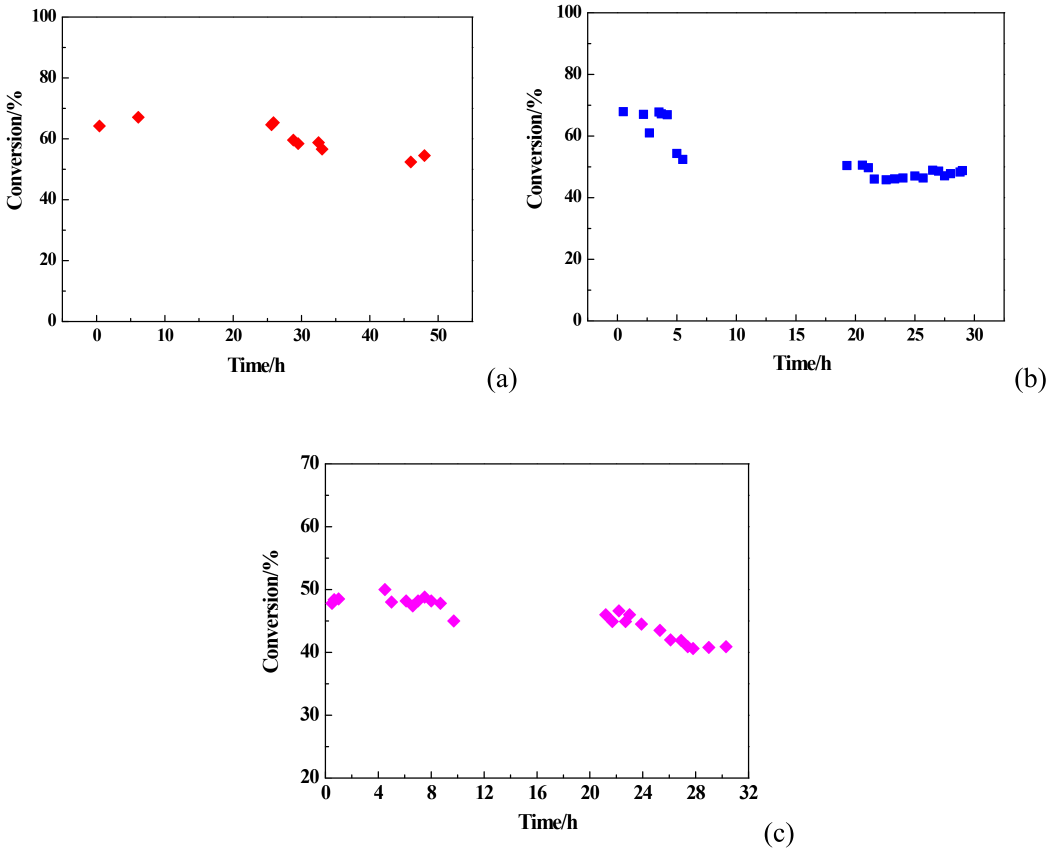


Fig. S6 Catalyst durability tests over (a) s-Au/*h*-Co_3O_4, (b) Au/*h*-Co_3O_4, and (c) Au/*t*-Co_3O_4. The fresh samples are pretreated in the reaction atmosphere and the initial CO conversion level is controlled to be approximately 50-70%. In the case of (a), durability test was performed on a fresh sample with in-situ pretreatment; while in the cases of (b) and (c), durability test was directly performed after activity repeatability test.